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10/531,218

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EXAMINER

MAKI, STEVEN D

ART UNIT

PAPER NUMBER

1791

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 10/531,218 | Applicant(s) SEKI ET AL. | |
| | Examiner Steven D. Maki | Art Unit 1791 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1) A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6-23-08 has been entered.

2) The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3) **Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (specification page 1 lines 19-33, page 2 lines 1-12) in view of Sucech (US 5,643,510) and Diez et al (US 5,240,639).**

The admitted prior art discloses a process for manufacturing a foamed gypsum board comprising:

blowing air into a foaming agent to form a "**preliminarily produced foam**";

obtaining a foamed gypsum slurry by mixing the "preliminarily produced foam" into a kneaded material containing calcined gypsum, adhesive, additives and water;

pouring the foamed gypsum slurry into a space between upper and lower base papers;

passing the gypsum slurry covered with base papers through a shaping machine for determining the thickness and width of a gypsum board;
roughly cutting off the shaped strip-type gypsum board;
drying the rough cut gypsum board by passing it through a force drying machine;
cutting the dried gypsum board to a predetermined dimension.

The admitted prior art does not recite forming the preliminarily produced foam using a foaming agent and a pore size adjusting agent.

As to claim 1, it would have been obvious to one of ordinary skill in the art to obtain a **"foaming agent for producing foams of desired sizes" ("pregenerated foam")** by preliminarily adding a "pore size adjusting agent" to a stock solution of foaming agent so that when such a "foaming agent for producing foams of desired sizes" is used in the admitted prior art process to form "preliminary produced foam" ("pregenerated foam"), the manufactured gypsum board (plaster board) has pores with predetermined size distributed in a gypsum core in view of Sucech's suggestion to control void size (and thereby improve nail pull and strength) in a foamed gypsum board by forming a **"pregenerated foam"** from a mixture of a first stable foaming agent such as alkyl ether sulfate and a second unstable foaming agent such as alkyl sulfate before adding the foam to the gypsum slurry to form a foamed gypsum slurry to be placed between upper and lower base papers. Hence, the admitted prior art discloses the combination of steps of blowing air into a foaming agent to produce "foam" and then mixing the "foam" into kneaded material that contains calcined gypsum, adhesive, various additives and water. See page 1 lines 19-33 and page 2 lines 1-12 of the

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specification. Examiner acknowledges that the admitted prior art is silent as to the composition of the foaming agent. However, Sucech is not silent as to the composition of a foaming agent. In particular, Sucech et al discloses a composition comprising a mixture of first foaming agent (for producing small foam voids) and second foaming agent (for forming larger size voids). Sucech et al is also not silent as to the use of air with the mixture (blended stream) of the first and second foaming agents. Attention is directed to Sucech's teaching to (1) mix the two foaming agents just prior to feeding them into the foam generator (col. 3 lines 17-18) and (2) Sucech et al's teaching that foam is generated from a mixture of liquid foaming agent, air and water in a suitable foam generating apparatus (col. 1 lines 18-20). Thus, the admitted prior art and Sucech et al when considered as a whole teach the claimed preliminarily adding step, blowing air step and mixing into kneaded material step. It is emphasized that Sucech teaches mixing the first foaming agent and second foaming agent to form a mixture and then combining this mixture with air in a foam generating apparatus to form a foam and then adding the foam to the slurry. The admitted prior art substantially discloses the claimed invention (including the rough cutting step) except for the use of two agents to form the pregenerated foam. Sucech motivates one of ordinary skill in the art to use two agents to form pregenerated foam to obtain the benefit of controlling void size (and thereby improve nail pull and strength) in a foamed gypsum board.

The claimed "stock solution of the foaming agent" reads on one agent of Sucech and the claimed "pore size adjusting agent" reads on the other agent of Sucech since the combination of these agents function to create voids of desired size. More

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specifically, **the claimed "stock solution of foaming agent" reads on Sucech's first stable foaming agent such as alkyl ether sulfate (major portion with $y \geq 1$)**. It is noted that alkyl ether sulfate is used as the foaming agent in applicant's example. **The claimed "pore size adjusting agent" reads on the second foaming agent such as alkyl sulfate** since Sucech explains that increasing the amount of alkyl sulfate ($y = 0$) increases the size of the bubbles. It is noted that alkyl sulfate as disclosed by Sucech is an "alkane sulfonate-type surface active agent" (five lines from bottom of claim 1).

With respect to amount, the claimed amount of 0.00001 to 0.005 parts by weight pore adjusting agent would have been obvious in view of (1) Sucech's teaching to use alkyl ether sulfate as one agent and alkyl sulfate as the other agent and (2) Diez et al's teaching to one of ordinary skill in the gypsum board art to use a small amount such as 0.01 - 0.03 parts by weight of foaming agent comprising alkyl ether sulfate and alkyl sulfate per 100 parts gypsum wherein the alkyl sulfate ($y=0$) is 25-85 weight percent of the foaming agent.

4) **Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (specification page 1 lines 19-33, page 2 lines 1-12) in view of Sucech (US 5,643,510) and Diez et al (US 5,240,639) as applied above and further in view of Soviet Union (SU 1252321) or Japan (JP 10-330174).**

As to claim 4, it would have been obvious to one of ordinary skill in the art to provide the pore size adjusting agent such that it contains a substance as set forth in claim 4 in view of Soviet Union's suggestion to improve stability of foam and improve strength of lightweight concrete or plaster board by using a **"mixture for pore**

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formation" ("pregenerated foam") obtained by mixing ferric sulfate *and* alkyl-aromatic sulphonate(s) or Japan's suggestion to obtain lightweight plaster board having adhesive property to paper and improved strength by using a "foam adjusting agent" for controlling size of air cells in gypsum slurry such as fatty acid derivative, ferric sulfate, aluminum sulfate, etc. and a frothing agent such as alkyl ether sulfate. It is emphasized that Sucech and Japan disclose using alkyl ether sulfate as a foaming agent and that Japan teaches using foam adjusting agent such as ferric sulfate or aluminum sulfate in combination with alkyl ether sulfate.

Remarks

- 5) Applicant's arguments with respect to claims 1 and 4 are have been considered but are moot in view of the new ground(s) of rejection.
- 6) No claim is allowed.
- 7) Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven D. Maki whose telephone number is (571) 272-1221. The examiner can normally be reached on Mon. - Fri. 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven D. Maki/
Primary Examiner, Art Unit 1791

Steven D. Maki
July 7, 2008